Assessment Tools

Hatim Al-Jifree

MB;ChB(Hon), MMedEd, CHSE, FRCSC

Gynecological Oncology Consultant

Assistant Professor

Tools

- Written Tests
- Structured Oral Examinations
- Direct Observation (mini-CEX)
- Objectives Structured Clinical Examination (OSCE)
- Standardized Patients
- Multi-source Feedback (360° assessment)
- Portfolios and Logbooks
- Simulation-based assessment

Written Tests

- Written Tests
  - ❿ **Constructed response**
    - Essays
    - Short-answer questions
    - Modified Essays
  - ❿ **Selected response**
    - Multiple Choice Questions
    - Matching Questions
    - Extended Matching questions
    - True - False

Constructed Response

- Advantages:
  - **Multiple** learning objectives can be assessed
  - Higher-order knowledge can be addressed (**Application**)
  - **Simple** to develop and administer
- Disadvantages:
  - Difficult to **score reliably**
  - Learner's approaches to questions are **inconsistent** and unstandardized
  - Difficult for markers to avoid the ***halo*** or millstone effect
  - Time consuming
  - Influence of **handwriting**, **grammar**, writing abilities and **skills**

Constructed Response

- Good for Assessing:
  - Medical expertise (knowledge and attitudes)
  - Organizational and writing skills
  - Ability to synthesize information
  - Written communication
  - Managerial knowledge base
  - Approaches to health advocacy
  - Scholarly knowledge base
  - Professional knowledge base (e.g. ethics)

Constructed Response

- Limited ability to assess:
  - ❿Performance in **actual** practice
  - ❿Practice **behaviors**
  - ❿**Clinical skills** and procedures
  - ❿Collaborative skills

    (e.g. teamwork and conflict negotiation)

Selected response

- Advantages
  - Can assess **diverse content**
  - **Standardized**
  - **Administration** is straightforward
  - **Large number** of learners can take the test **simultaneously**
  - Questions can be **banked** and **reused**
- Disadvantages:
  - Correct responses could be due to **chance**
  - Low face validity
  - **Difficult** to create incorrect yet plausible **distractors** for MCQs
  - Question development is **time-consuming** (***up to 60 Minutes***)

Selected Response

- Good for Assessing:
  - ❿ Knowledge and **application** of knowledge
  - ❿ **Core knowledge** in all CanMeds competencies
  - ❿ Diagnostic **reasoning**
- Limited ability to assess:
  - ❿ **Communication** skills
  - ❿ **Collaboration**
  - ❿ **Manager** skills

Structured Oral Examinations

- Definition:

  - An assessor or panel of assessors to pose a **series of questions** to assess and react to the learner's responses.
  - Oral examinations allow a high level of **dynamic interaction.**
  - For **summative** oral assessments.
  - They are usually **scored** using a pre-defined, structured **template**.

Structured Oral Examinations

- Advantages:
  - Tests **beyond knowledge** base to see how knowledge is applied to a situation
  - Learners can get **immediate feedback**
  - Assessor(s) can **probe** to confirm learner's knowledge or **reasoning** or to explore competencies to a greater **depth**
  - High face validity
- Disadvantages:
  - **Limited** number of **cases** may lead to **low reliability**
  - Difficult to **standardize**
  - Testing environment may **provoke anxiety** in learners, leading to **poor performance**
  - Time-consuming

Structured Oral Examinations

- Good for assessing:
  - ❿ Medical Expert
  - ❿ Communicator
  - ❿ Manager
  - ❿ Health Advocate
  - ❿ Scholar
  - ❿ Professional

Structured Oral Examinations

- Limited ability to assess:
  - ❿ Procedural skills
  - ❿ Physical examination
  - ❿ Actual performance in real situations
  - ❿ Collaboration, teamwork and leadership

Direct Observation

- Definition:

➓Ongoing observation, assessment and ***documentation***

➓What **distinguishes** direct observation from other forms of assessment is that the learner is performing ***authentic*** actions that occur ***naturally*** as part of **daily** clinical experience (mini-CEX)

Direct Observation

- Advantages:

  - Enables assessment of **real-time** performance
  - Enables assessment of **technical skills** that ***cannot*** be measured in other forms of assessment
  - Highly useful as **formative** assessment
  - High **face validity**

Direct Observation

- Disadvantages:
  - ❿ If unstructured & unstandardized, **validity** and **reliability** are questionable
  - ❿ **Different** observers might assess **different** things
  - ❿ **Little control** over the situations observed; resulting behaviors are highly varied
  - ❿ **Documentation** is sometimes **not timely** or does **not occur** at all

Direct Observation

- Good for assessing:
  - Nearly **all** key competencies for all CanMEDS Roles
  - Higher-order behaviors (Skills application)
- Limited ability to assess:
  - Scholarly **research** competencies
  - Scholarly **lifelong learning**

OSCE

- Definition:

➓ The objective structured clinical examination (OSCE) samples the ***performance*** of learners as they rotate through a series of stations.

➓ At each station,learners may encounter:

- Standardized patient
- Simulation
- Visual information (e.g.,x-ray films,electrocardiograms) = OSPE
- Written task = OSPE

➓ Learners are usually asked to **perform** a specific skill, to **simulate** part of a patient encounter, or to **answer** questions based on the presented material.

OSCE

- Advantages:
  - ❿ Clinical basis lends high **face validity**
  - ❿ Can focus on **specific content** areas or skills
  - ❿ **Standardizable**
  - ❿ Provides **direct observation** of performance in a **controlled situation**
- Disadvantages:
  - ❿ **Time-consuming** to develop
  - ❿ **Complex** to administer: requires many examiners and many rooms
  - ❿ Only **a few content** areas can be sampled
  - ❿ Testing environment is **artificial**
  - ❿ **Cost-effective** only if many learners are assessed

OSCE

- Good for assessing:
  - ❿ **History**-taking skills
  - ❿ Physical **examination** skills
  - ❿ Physician-patient **communication** skills
  - ❿ Diagnostic **reasoning**, patient management and treatment planning
- Limited ability to assess:
  - ❿ Complex **ethical** and professional **behaviors**
  - ❿ Collaborative interactions
  - ❿ Teaching and research skills

Standardized Patients

- Definition:
  - ❿Standardized patients can be either:
    - Healthy **actors** trained to simulate
    - Actual **patients** trained to present
  - They can be included as part of:
    - OSCE station
    - Oral examination

Standardized Patients

- Advantages:
  - ➉ High face validity
  - ➉ **Focused** content areas/skills
  - ➉ **Standardized** to assess all learners consistently
- Disadvantages:
  - ➉ Time-consuming to **train** **standardized patients**
  - ➉ Time-consuming to **develop** **scenarios and scripts**
  - ➉ **Expensive** if volunteers are not used
  - ➉ Only a **few content** areas can be sampled

Standardized Patients

- Good for assessing:
  - ➉ History-taking
  - ➉ Physical examination
  - ➉ Physicia-patient communication
  - ➉ Diagnostic reasoning
- ➉ Limited ability to assess:
  - ➉ Complex ethical and **professional** behaviors
  - ➉ Genuine **collaboration**
  - ➉ **Scholar** roles
  - ➉ ***Pediatric practice***

Multi-source Feedback (360° Assessment)

- Specific instruments (Survey) to gather data about:
  - ❿Particular behaviors
  - ❿Professional constructs

  (e.g. professionalism and communication skills)

- May include:
  - Physicians (e.g. resident, peers, supervising physicians and medical students)
  - Allied health professionals (e.g. nurses or pharmacists)
  - Patients and family members
- A self-assessment is frequently included

Multi-source Feedback

- Advantages:
  - ➉ Assesses **behaviors**
  - ➉ **Reliability** is obtained by virtue of the number of assessors
  - ➉ Can be used for **formative** purposes to guide self-improvement
- Disadvantages:
  - ➉ Survey had to be ***meticulously designed***
  - ➉ Requires an ***appropriate sample*** of assessors for reliability
  - ➉ Requires a stable infrastructure for survey **distribution**, data **collation** and **reporting**
  - ➉ *Language barriers* may influence patient participation

Multi-source Feedback

- Good for assessing:
  - Interpersonal **communication**
  - **Professionalism**
  - **Collaboration**
  - **Advocacy** for patients
- Limited ability to assess:
  - Knowledge base and technical skills

    (Best left to expert observers)

Portfolios and Logbooks

- Logbooks: are structured instruments for documenting learning activities
- Portfolios provide:
  - Means of collecting evidence of the achievement
  - Over time (Longitudinal)
  - ***Reflection***
  - Multiple activities

Portfolios and Logbooks

- Advantages:
  - ⓾ High authenticity
  - ⓾ Flexible
  - ⓾ Learner-centered, reflecting individual goals and interests
- Disadvantages:
  - ⓾ Only as useful as the **component** parts
  - ⓾ **Time-consuming** to create and to assess
  - ⓾ Requires **appropriate design**
  - ⓾ Requires review and input by the **teacher**

Portfolios and Logbooks

- Good for assessing:
  - ⓾Almost all CanMEDS Roles
  - ⓾Documentation of procedural activities
  - ⓾Various aspects of the Communicator Role (written, oral, interpersonal)
  - ⓾Scholar competencies of lifelong learning, research and teaching
  - ⓾Demonstrates evidence of collaboration and teamwork
  - ⓾Excellent for providing ongoing formative assessment

Portfolios and Logbooks

- Limited ability to assess:

  ❿ Medical Expert Role

  ❿ Situations where summative decisions are being taken

Simulation-based assessment

- Simulation is the artificial recreation of a clinical environment to undertake a specific task in a controlled manner with no risk to patients
  (Post-Partum Hemorrhage Workshop)
- Simulation is particularly useful in assessing learner performance of:
  - Complete procedure
  - In crisis situations that might not commonly be encountered
    (4th degree tear or Cardiac arrest)

Simulation-based assessment

- Advantages:
  - Measures the **entire procedure** from start to finish
  - Measures performance in **emergencies**
  - provides a **standardized** and controlled environment
  - Formative and summative assessments are possible
- Disadvantages:
  - High **cost**
  - **Resource** intensive (space, equipment and personnel)
  - Requires considerable **commitment** of **faculty** time

Simulation-based assessment

- Good for assessing:
  - ❿ Medical Expert
  - ❿ Communication
  - ❿ Collaboration
  - ❿ Manager
  - ❿ Professional

Simulation-based assessment

- Limited ability to assess:
  - ❿ Health Advocate Role
  - ❿ Scholar Role

Key Tools for assessing the CanMed competencies

	Medial Expert	Communicator	Collaborator	Health Advocate	Manager	Scholar	Professional
Written tests	+++	+	+	+	++	+++	**+**
Oral exam	+++	+	+	+	+	+	**+**
Direct Observation & ITER	+++	+++	+++	+	++	+++	**+++**
OSCE / StdPt	+++	+++	+	+	+	+	**+**
360° / Peer evaluation	++	++	+++	++	++	+	**++**
Portfolio	++	+	+	++	++	+++	**++**
Simulations	+++	+	+	+	+	+	**+**